

WHAT IS CLAIMED IS:

1 1. A first bridge apparatus comprising:
2 a first device driver unit for controlling a first
3 interface unit connected to a first network;
4 a second device driver unit for controlling a
5 second interface unit connected to a second network;
6 a bridging unit for performing a bridging process;
7 and
8 a middleware unit, inserted between the bridging
9 unit and the first device driver unit, that includes
10 a transmitter for performing priority
11 processing for a relay of a frame from the bridging unit to
12 the first device driver unit.

1 2. A bridge apparatus according to claim 1,
2 further comprising:
3 a cache table in which session data having high
4 priorities are preregistered; and
5 a plurality of first FIFO queues corresponding to
6 priorities,
7 wherein the transmitter includes
8 a header comparator for, upon the reception of
9 a transmission request for the frame to be relayed from the
10 bridging unit to the first device driver unit, searching
11 the cache table and extracting a priority based on headers
12 included in a second to a fourth OSI layer of the frame,
13 and for adding the transmission request to one of the first
14 FIFO queues in accordance with the priority that is
15 extracted, and
16 a synthesization unit for, in accordance with a

17 priority for the first FIFO queue, outputting the
18 transmission request from the first FIFO queue to the first
19 device driver unit.

1 3. A bridge apparatus according to claim 1,
2 further comprising:
3 a first cache table, in which first session data
4 are predesignated;
5 a second cache table, used when a session is
6 established;
7 a first FIFO queue; and
8 a second FIFO queue,
9 wherein the middleware unit includes
10 a first header comparator for, when a
11 transmission request is issued for the frame to be relayed
12 from the bridging unit to the first device, extracting
13 second session data from headers of a second to a fourth
14 OSI layer in the frame and, when the second session data
15 are registered in the second cache table, adding the
16 transmission request to the first FIFO queue; for, when the
17 second session data are registered neither in the first
18 cache table nor in the second cache table and the frame to
19 be relayed is a specific, predesignated frame, registering
20 the second session data in the second cache table and
21 adding the transmission request to the first FIFO queue;
22 for, when the second session data are registered in the
23 first cache table but not in the second cache table and the
24 frame is not a specific, predesignated frame, adding the
25 transmission request to the second FIFO buffer; or for,
26 when the second session data are registered neither in the

27 first nor the second cache tables, adding the transmission
28 request to the second FIFO queue, and
29 a synthesization unit for outputting to the
30 first device driver unit, in the named order, the
31 transmission requests in the first FIFO queue and in the
32 second FIFO queue.

1 4. A bridge apparatus according to claim 3,
2 wherein the middleware unit includes:
3 the header comparator for activating a frame
4 monitor timer when the second session data are not
5 registered in the second cache table but are registered in
6 the first cache table, and when the frame to be relayed is
7 a specific predesignated frame; and
8 a monitor unit for, when the value of the frame
9 monitor timer has reached a predetermined value, deleting
10 from the second cache table the second session data that
11 correspond to the frame monitor timer.

1 5. A bridge apparatus comprising:
2 a first device driver unit for controlling a first
3 interface unit connected to a first network;
4 a second device driver unit for controlling a
5 second interface unit connected to a second network;
6 a bridging unit for determining whether the
7 address of a frame received from the first or the second
8 network is registered in an address table, and for
9 performing bridging processing for the frame; and
10 a middleware unit including
11 a transmitter, inserted between the bridging

12 unit and the first device driver unit, for performing the
13 priority processing for a first frame to be relayed from
14 the bridging unit to the first device driver unit, and
15 a receiver, inserted between the bridging unit
16 and the second device driver unit, for performing the
17 priority processing for a second frame to be relayed from
18 the first device driver unit to the bridging unit.

1 6. A bridge apparatus according to claim 5,
2 further comprising:

3 a cache table in which session data are
4 preregistered;

5 a first FIFO queue for the transmitter; and
6 a second FIFO queue for the receiver,

7 wherein the transmitter includes

8 a first header comparator for, upon the
9 reception of a transmission request for the first frame to
10 be relayed from the bridging unit to the first device
11 driver unit, searching the cache table and extracting a
12 first priority, based on headers that are included in a
13 second to a fourth OSI layer in the first frame, and for,
14 in accordance with the first priority, adding the
15 transmission request for the first frame to the first FIFO
16 queue, and

17 a first synthesization unit for transmitting,
18 in accordance with the first priority, the transmission
19 request from the first FIFO queue to the first device
20 driver unit,

21 and wherein the receiver includes

22 a second header comparator for, upon the

23 reception of a bridging request for the second frame,
24 searching the cache table and extracting a second priority,
25 based on headers that are included in a second to a fourth
26 OSI layer in the second frame, and, for, in accordance with
27 the second priority, adding the bridging request for the
28 second frame to the second FIFO queue, and
29 a second synthesization unit for transmitting,
30 in accordance with the second priority, the bridging
31 request from the second FIFO queue to the bridging unit.

1 7. A bridge apparatus comprising:
2 a first device driver unit for controlling a first
3 interface unit connected to a first network;
4 a second device driver unit for controlling a
5 second interface unit connected to a second network;
6 a bridging unit for examining the address of a
7 frame received from the first or the second network to
8 determine whether the address is registered in an address
9 table, and for performing bridging processing for the
10 frame;
11 a middleware unit, inserted between the bridging
12 unit and the first device driver unit;
13 a first cache table, in which first session data
14 having a high priority are predesignated;
15 a second cache table, used when a session is
16 established;
17 a first FIFO queue;
18 a second FIFO queue;
19 a third FIFO queue; and
20 a fourth FIFO queue,

21 wherein the middleware unit includes
22 a first header comparator for, when a
23 transmission request is issued for a first frame to relayed
24 from the bridging unit to the first device driver unit,
25 extracting second session data from headers of a second to
26 a fourth OSI layer in the first frame and, when the second
27 session data are registered in the second cache table,
28 adding the transmission request to the first FIFO queue;
29 for, when the second session data are registered in the
30 first cache table but not in the second cache table and the
31 first frame to be relayed is a specific, predesignated
32 frame, registering the second session data in the second
33 cache table and adding the transmission request to the
34 first FIFO queue; for, when the second session data are
35 registered in the first cache table but not in the second
36 cache table and the first frame is not a specific,
37 predesignated frame, adding the transmission request to the
38 second FIFO buffer; or for, when the second session data
39 are registered neither in the first nor the second cache
40 tables, adding the transmission request to the second FIFO
41 queue,
42 a first synthesization unit for outputting to
43 the first device driver unit, in the named order, the
44 transmission requests in the first FIFO queue and in the
45 second FIFO queue,
46 a second header comparator for, when a bridging
47 request is issued for a second frame to be relayed from the
48 first device driver unit to the bridging unit, extracting
49 third session data from headers of a second to a fourth OSI
50 layer in the second frame and, when the third session data

51 are registered in the second cache table, adding the
52 bridging request to the third FIFO queue; for, when the
53 third session data are registered in the first cache table
54 but not in the second cache table and the second frame to
55 be relayed is a specific, predesignated frame, registering
56 the third session data in the second cache table and adding
57 the bridging request to the third FIFO queue; for, when the
58 third session data are registered in the first cache table
59 but not in the second cache table and the second frame is
60 not a specific, predesignated frame, adding the bridging
61 request to the fourth FIFO queue; or for, when the second
62 session data are registered neither in the first nor in the
63 second cache tables, adding the bridging request to the
64 fourth FIFO queue, and
65 a second synthesization unit for outputting to
66 the bridging unit, in the named order, the bridging
67 requests in the third FIFO queue and in the fourth FIFO
68 queue.

1 8. A bridge apparatus according to claim 7,
2 wherein the middleware unit includes:
3 the first header comparator for activating a first
4 frame monitor timer when the second session data are not
5 registered in the second cache table but are registered in
6 the first cache table, and when the first frame to be
7 relayed is a specific predesignated frame; the second
8 header comparator for activating a second frame monitor
9 timer when the third session data are not registered in the
10 second cache table but are registered in the first cache
11 table, and when the second frame to be relayed is a

12 specific predesignated frame; and
13 a monitor unit for, when the value of the first
14 frame monitor timer has reached a predetermined value,
15 deleting from the second cache table the second session
16 data that correspond to the first frame monitor timer, and
17 for, when the value of the second frame monitor timer has
18 reached a predetermined value, deleting from the second
19 cache table the third session data that correspond to the
20 second frame monitor timer.

1 9. A bridge apparatus comprising:
2 a first device driver unit for controlling a first
3 interface unit connected to a first network;
4 a second device driver unit for controlling a
5 second interface unit connected to a second network;
6 a bridging unit for determining whether the
7 address of a frame received from the first or the second
8 network is registered in an address table, and for
9 performing bridging processing for the frame;
10 a first middleware unit including
11 a first transmitter, inserted between the
12 bridging unit and the first device driver unit, for
13 performing the priority processing for a first frame to be
14 relayed from the bridging unit to the first device driver
15 unit, and
16 a first receiver, inserted between the bridging
17 unit and the first device driver unit, for performing the
18 priority processing for a second frame to be relayed from
19 the first device driver unit to the bridging unit; and
20 a second middleware unit including

21 a second transmitter, inserted between the
22 bridging unit and the second device driver unit, for
23 performing the priority processing for a third frame to be
24 relayed from the bridging unit to the second device driver
25 unit, and

26 a second receiver, inserted between the
27 bridging unit and the second device driver unit, for
28 performing the priority processing for a third frame to be
29 relayed from the second device driver unit to the bridging
30 unit.

1 10. A bridge apparatus according to claim 9,
2 further comprising:

3 a cache table in which session data having a high
4 priority are preregistered;

5 a transmission FIFO queue, used for the second
6 transmitter and corresponding to a priority; and

7 a reception FIFO queue, used for the second
8 receiver and corresponding to a priority,

9 wherein the second transmitter includes

10 a transmission request header comparator for,
11 upon the reception of a transmission request for the third
12 frame to be relayed from the bridging unit to the second
13 device driver unit, searching the cache table and, based on
14 headers that are included in a second to a fourth OSI layer
15 in the third frame, extracting a transmission priority and,
16 in accordance with the transmission priority, adding the
17 transmission request for the third frame to the
18 transmission FIFO queue, and

19 a transmission request synthesization unit for

20 transmitting, in accordance with the transmission priority,
21 the transmission request from the transmission FIFO queue
22 to the second device driver unit,
23 and wherein the second receiver includes
24 a bridging request header comparator for, upon
25 the reception of a bridging request for the fourth frame to
26 be relayed from the second device driver unit to the
27 bridging unit, searching the cache table and, based on
28 headers that are included in a second to a fourth OSI layer
29 in the fourth frame, extracting a reception priority and,
30 in accordance with the reception priority, adding the
31 bridging request for the fourth frame to the reception FIFO
32 queue, and
33 a bridging request synthesization unit for, in
34 accordance with the reception priority, transmitting the
35 bridging request from the reception FIFO queue to the
36 bridging unit.

1 11. A bridge apparatus comprising:
2 a first device driver unit for controlling a first
3 interface unit connected to a first network;
4 a second device driver unit for controlling a
5 second interface unit connected to a second network;
6 a bridging unit for performing bridging
7 processing;
8 a middleware unit, inserted between the bridging
9 unit and the first and second device driver units;
10 a first cache table, in which first session data
11 are predesignated;
12 a second cache table, used when a session is

13 established;
14 a third cache table, in which fourth session data
15 are predesignated;
16 a fourth cache table, used when a session is
17 established;
18 a first FIFO queue;
19 a second FIFO queue;
20 a third FIFO queue;
21 a fourth FIFO queue;
22 a fifth FIFO queue;
23 a sixth FIFO queue;
24 a seventh FIFO queue; and
25 an eighth FIFO queue,
26 wherein the middleware unit includes
27 a first header comparator for, when a
28 transmission request is issued for a first frame to relayed
29 from the bridging unit to the first device driver unit,
30 extracting second session data from headers of a second to
31 a fourth OSI layer in the first frame and, when the second
32 session data are registered in the second cache table,
33 adding the transmission request for the first frame to the
34 first FIFO queue; for, when the second session data are
35 registered in the first cache table but not in the second
36 cache table and the first frame to be relayed is a specific,
37 predesignated frame, registering the second session data in
38 the second cache table and adding the transmission request
39 to the first FIFO queue; for, when the second session data
40 are registered in the first cache table but not in the
41 second cache table and the first frame is not a specific,
42 predesignated frame, adding the transmission request to the

43 second FIFO buffer; or for, when the second session data
44 are registered neither in the first nor the second cache
45 tables, adding the transmission request to the second FIFO
46 queue,

47 a first synthesization unit for outputting to
48 the first device driver unit, in the named order, the
49 transmission requests for the first frame in the first FIFO
50 queue and in the second FIFO queue,

51 a second header comparator for, when a bridging
52 request is issued for a second frame to be relayed from the
53 first device driver unit to the bridging unit, extracting
54 third session data from headers of a second to a fourth OSI
55 layer in the second frame and, when the third session data
56 are registered in the second cache table, adding the
57 bridging request for the second frame to the third FIFO
58 queue; for, when the third session data are registered in
59 the first cache table but not in the second cache table and
60 the second frame to be relayed is a specific, predesignated
61 frame, registering the third session data in the second
62 cache table and adding the bridging request to the third
63 FIFO queue; for, when the third session data are registered
64 in the first cache table but not in the second cache table
65 and the second frame is not a specific, predesignated frame,
66 adding the bridging request to the fourth FIFO queue; or
67 for, when the second session data are registered neither in
68 the first nor in the second cache tables, adding the
69 bridging request to the fourth FIFO queue,

70 a second synthesization unit for outputting to
71 the bridging unit, in the named order, the bridging
72 requests for the second frame in the third FIFO queue and

73 in the fourth FIFO queue,
74 a third header comparator for, when a
75 transmission request is issued for a third frame to relayed
76 from the bridging unit to the second device driver unit,
77 extracting fifth session data from headers of a second to a
78 fourth OSI layer in the third frame and, when the fifth
79 session data are registered in the fourth cache table,
80 adding the transmission request for the third frame to the
81 fifth FIFO queue; for, when the fifth session data are
82 registered in the third cache table but not in the fourth
83 cache table and the third frame to be relayed is a specific,
84 predesignated frame, registering the fifth session data in
85 the fourth cache table and adding the transmission request
86 to the fifth FIFO queue; for, when the fifth session data
87 are registered in the third cache table but not in the
88 fourth cache table and the third frame is not a specific,
89 predesignated frame, adding the transmission request to the
90 sixth FIFO buffer; or for, when the fifth session data are
91 registered neither in the third nor the fourth cache tables,
92 adding the transmission request to the sixth FIFO queue,
93 a third synthesization unit for outputting to
94 the second device driver unit, in the named order, the
95 transmission requests for the third frame in the fifth FIFO
96 queue and in the sixth FIFO queue,
97 a fourth header comparator for, when a bridging
98 request is issued for a fourth frame to be relayed from the
99 second device driver unit to the bridging unit, extracting
100 sixth session data from headers of a second to a fourth OSI
101 layer in the fourth frame and, when the sixth session data
102 are registered in the fourth cache table, adding the

103 bridging request for the fourth frame to the seventh FIFO
104 queue; for, when the sixth session data are registered in
105 the third cache table but not in the fourth cache table and
106 the fourth frame to be relayed is a specific, predesignated
107 frame, registering the sixth session data in the fourth
108 cache table and adding the bridging request to the seventh
109 FIFO queue; for, when the sixth session data are registered
110 in the third cache table but not in the fourth cache table
111 and the fourth frame is not a specific, predesignated frame,
112 adding the bridging request to the eighth FIFO queue; or
113 for, when the sixth session data are registered neither in
114 the third nor in the fourth cache tables, adding the
115 bridging request to the eighth FIFO queue, and
116 a fourth synthesization unit for outputting to
117 the bridging unit, in the named order, the bridging
118 requests for the fourth frame in the seventh FIFO queue and
119 in the eighth FIFO queue.

1 12. A bridge apparatus according to claim 11,
2 further comprising:
3 a first monitor timer;
4 a second monitor timer;
5 a third monitor timer; and
6 a fourth monitor timer,
7 wherein the middleware unit includes
8 a monitor unit for deleting the second session
9 data from the second cache table when a specific value is
10 reached in the first monitor timer, for deleting the third
11 session data from the second cache table when a specific
12 value is reached in the second monitor timer, for deleting

13 the fourth session data from the fourth cache table when a
14 specific value is reached in the third monitor timer, and
15 for deleting the fifth session data from the fourth cache
16 table when a specific value is reached in a fourth monitor
17 timer.

1 13. A bridge apparatus comprising:
2 a first device driver unit for controlling a first
3 interface unit connected to a first network;
4 a second device driver unit for controlling a
5 second interface unit connected to a second network;
6 a bridging unit for performing bridging
7 processing;
8 a cache table in which session data having a high
9 priority are stored;
10 a first FIFO queue corresponding to a priority;
11 a second FIFO queue corresponding to a priority,
12 wherein the bridging unit includes
13 a bridging processor connected to the first
14 device driver unit and the second device driver unit,
15 a first header comparator for, when a first
16 bridging request for a first frame to be relayed is
17 received from the first device driver unit, searching the
18 cache table and extracting a first priority for the first
19 bridging request, based on headers that are included in a
20 second to a fourth OSI layer in the first frame, and for,
21 in accordance with the first priority, adding the first
22 bridging request to the first FIFO queue,
23 a first synthesization unit for transmitting,
24 in accordance with the first priority, the first bridging

25 request from the first FIFO queue to the bridging processor,
26 a second header comparator for, when a second
27 bridging request for a second frame to be relayed is
28 received from the second device driver unit, searching the
29 cache table and extracting a second priority for the second
30 bridging request, based on headers that are included in a
31 second to a fourth OSI layer in the second frame, and for,
32 in accordance with the second priority, adding the second
33 bridging request to the second FIFO queue, and
34 a second synthesization unit for transmitting,
35 in accordance with the second priority, the second bridging
36 request from the second FIFO queue to the bridging
37 processor.

1 14. A bridge apparatus comprising:
2 a first device driver unit for controlling a first
3 interface unit connected to a first network;
4 a second device driver unit for controlling a
5 second interface unit connected to a second network;
6 a bridging processor for performing bridging
7 processing;
8 a first cache table, in which first session data
9 having a high priority are predesignated;
10 a second cache table, used when a session is
11 established;
12 a first FIFO queue;
13 a second FIFO queue;
14 a third FIFO queue; and
15 a fourth FIFO queue,
16 wherein the middleware unit includes

17 a first header comparator for, when a bridging
18 request is issued for a first frame to relayed from the
19 first device driver unit to the bridging processor,
20 extracting second session data from headers of a second to
21 a fourth OSI layer in the first frame and, when the second
22 session data are registered in the second cache table,
23 adding the bridging request for the first frame to the
24 first FIFO queue; for, when the second session data are
25 registered in the first cache table but not in the second
26 cache table and the first frame to be relayed is a specific,
27 predesignated frame, registering the second session data in
28 the second cache table and adding the bridging request to
29 the first FIFO queue; for, when the second session data are
30 registered in the first cache table but not in the second
31 cache table and the first frame is not a specific,
32 predesignated frame, adding the bridging request to the
33 second FIFO buffer; or for, when the second session data
34 are registered neither in the first nor the second cache
35 tables, adding the bridging request to the second FIFO
36 queue,

37 a first synthesization unit for outputting to
38 the bridging processor, in the named order, the bridging
39 requests for the first frame in the first FIFO queue and in
40 the second FIFO queue,

41 a second header comparator for, when a bridging
42 request is issued for a second frame to be relayed from the
43 second device driver unit to the bridging processor,
44 extracting third session data from headers of a second to a
45 fourth OSI layer in the second frame and, when the third
46 session data are registered in the second cache table,

47 adding the bridging request for the second frame to the
48 third FIFO queue; for, when the third session data are
49 registered in the first cache table but not in the second
50 cache table and the second frame to be relayed is a
51 specific, predesignated frame, registering the third
52 session data in the second cache table and adding the
53 bridging request to the third FIFO queue; for, when the
54 third session data are registered in the first cache table
55 but not in the second cache table and the second frame is
56 not a specific, predesignated frame, adding the bridging
57 request to the fourth FIFO queue; or for, when the second
58 session data are registered neither in the first nor in the
59 second cache tables, adding the bridging request to the
60 fourth FIFO queue, and
61 a second synthesization unit for outputting to
62 the bridging processor, in the named order, the bridging
63 requests for the second frame in the third FIFO queue and
64 in the fourth FIFO queue.

1 15. A bridge apparatus according to claim 14,
2 further comprising:
3 a first monitor timer;
4 a second monitor timer; and
5 a monitor unit for deleting the second session
6 data from the second cache table when a specific value is
7 reached in the first monitor timer, for deleting the third
8 session data from the second cache table when a specific
9 value is reached in the second monitor timer, for deleting
10 the fourth session data from the fourth cache table when a
11 specific value is reached in the third monitor timer, and

12 for deleting the fifth session data from the fourth cache
13 table when a specific value is reached in a fourth monitor
14 timer.

1 16. A bridge apparatus according to claim 3,
2 wherein the specific frame is a frame, including an RTP
3 frame, defined by a communication protocol equal to or
4 higher than a fifth OSI layer.

1 17. A bridge apparatus according to claim 2,
2 wherein the session data include an MAC address that is
3 pertinent to the second OSI layer of the frame, a protocol
4 number and an IP address that are pertinent to the third
5 OSI layer, and a port number that is pertinent to the
6 fourth OSI layer.

1 18. A bridge apparatus according to claim 3,
2 wherein the first session data include an MAC address that
3 is pertinent to the second OSI layer of the frame, a
4 protocol number and an IP address that are pertinent to the
5 third OSI layer, and a port number that is pertinent to the
6 fourth OSI layer.

1 19. A bridge apparatus according to claim 7,
2 wherein the second and third session data include an MAC
3 address that is pertinent to the second OSI layer of the
4 frame, a protocol number and an IP address that are
5 pertinent to the third OSI layer, and a port number that is
6 pertinent to the fourth OSI layer.

1 20. A bridge apparatus according to claim 11,
2 wherein the fourth session data include an MAC address that
3 is pertinent to the second OSI layer of the frame, a
4 protocol number and an IP address that are pertinent to the
5 third OSI layer, and a port number that is pertinent to the
6 fourth OSI layer.

1 21. A bridge apparatus according to claim 11,
2 wherein the fifth and sixth session data include an MAC
3 address that is pertinent to the second OSI layer of the
4 frame, a protocol number and an IP address that are
5 pertinent to the third OSI layer, and a port number that is
6 pertinent to the fourth OSI layer.

1 22. A bridge method for a bridge apparatus that
2 relays frames for a second network and a first network
3 comprising the steps of:
4 receiving from the second network a specific frame
5 to be relayed to the first network;
6 when session data extracted session data from
7 headers of a second to a fourth OSI layer of the specific
8 frame satisfy a predetermined condition, providing a higher
9 priority for the specific frame in a transmission queue and
10 transmitting the specific frame to the first network.

1 23. A bridge method, for a bridge apparatus that
2 relays a second network and a first network, comprising
3 steps of:
4 receiving a specific frame to be relayed from the

5 second network to the first network and extracting session
6 data from headers of a second to a fourth OSI layer in the
7 specific frame;

8 when the session data satisfy a predetermined
9 condition, increasing a transmission priority for the
10 specific frame and transmitting the specific frame to the
11 first network;

12 receiving a specific frame to be relayed from the
13 first network to the second network and extracting session
14 data from headers of a second to a fourth OSI layer in the
15 specific frame;

16 when the session data satisfy a predetermined
17 condition, increasing a bridging priority for the specific
18 frame and transmitting the specific frame to the second
19 network.

1 24. A bridge method, for a bridge apparatus that
2 relays a second network and a first network, comprising
3 steps of:

4 receiving a specific frame to be relayed from the
5 second network to the first network and extracting session
6 data from headers of a second to a fourth OSI layer in the
7 specific frame;

8 when the session data satisfy a predetermined
9 condition, increasing a bridging priority for the specific
10 frame and performing bridging processing;

11 thereafter, when the session data extracted from
12 the specific frame satisfy a predetermined condition,
13 increasing a transmission priority for the specific frame
14 and transmitting the specific frame to the first network;

15 receiving a specific frame to be relayed from the
16 first network to the second network, and extracting session
17 data from headers of a second to a fourth OSI layer in the
18 specific frame;

19 when the session data satisfy a predetermined
20 condition, increasing a bridging priority for the specific
21 frame and performing bridging processing;

22 thereafter, extracting session data from the
23 headers of the second to the fourth OSI layer in the
24 specific frame; and

25 when the session data extracted from the specific
26 frame satisfy a predetermined condition, increasing a
27 transmission priority for the specific frame and
28 transmitting the specific frame to the second network.

1 25. A bridge method for a bridge apparatus that
2 relays frames for a second network and a first network
3 comprising the steps of:

4 receiving from the second network a specific frame
5 to be relayed to the first network;

6 when session data extracted from headers of a
7 second to a fourth OSI layer in the specific frame satisfy
8 a predetermined condition, providing a higher priority for
9 the specific frame in a bridging queue, performing bridging
10 processing and transmitting the specific frame to the first
11 network;

12 receiving from the first network a specific frame
13 addressing a transmission destination connected to the
14 second network;

15 when session data extracted from headers of a

16 second to a fourth OSI layer in the specific frame satisfy
17 a predetermined condition, providing a higher priority for
18 the specific frame in a bridging queue, performing bridging
19 processing, and transmitting the specific frame to the
20 second network.

1 26. A bridge method, for a bridge apparatus that
2 comprises a device driver for controlling interface units
3 connected to a plurality of networks, a bridging unit, for
4 comparing the address of a frame received via each of the
5 networks with each MAC address registered in an address
6 table and for performing bridging processing for the frame,
7 and a middleware unit, for controlling the interface unit
8 between the bridging unit and the device driver, comprising
9 steps of:

10 when the bridging unit issues transmission
11 requests for relaying specific sequential frames to a
12 predetermined transmission destination, upon the reception
13 of a first transmission request, the middleware unit, for
14 confirming header data included in a first specific frame,
15 extracting session data from headers of a second to a
16 fourth OSI layer of the first specific frame, registering
17 the session data in a cache table, increasing a
18 transmission priority for the first specific frame, and
19 issuing a transmission request to the device driver; and

20 when the succeeding specific frames are to be
21 sequentially transmitted, the middleware unit comparing the
22 session data registered in the cache table with session
23 data extracted from the second to the fourth OSI layers of
24 the succeeding specific frames, transmission priorities

25 being increased for specific succeeding frames, and
26 transmission requests being output to the device driver.

1 27. A bridge method, according to claim 26,
2 further comprising steps of:
3 when the device driver issues bridging requests
4 for specific sequential frames, which are output by a
5 predetermined transmission source and which are defined by
6 a communication protocol as being equal to or higher than a
7 fifth OSI layer, upon the reception of a first bridging
8 request, the middleware unit confirming header data in a
9 first specific frame, extracting session data from headers
10 for a second to a fourth OSI layer in the first specific
11 frame, registering the session data in a cache table,
12 increasing a bridging priority for the first specific frame
13 and issuing a bridging request to the bridging unit; and,
14 when succeeding specific frames are to be
15 sequentially received, the middleware unit comparing the
16 session data registered in the cache table with session
17 data extracted from second to fourth OSI layers in the
18 succeeding specific frames, increasing bridging priorities
19 for the succeeding specific frames, and outputting bridging
20 requests to the bridging unit.

1 28. A bridge method, according to claim 26,
2 wherefor, when session data are registered in the cache
3 table, monitoring of the session data is continuously
4 performed by the middleware unit until a predetermined
5 period of time has elapsed and no transmission request has
6 been received from the bridging unit for a frame having the

7 session data.

1 29. A bridge method, according to claim 27,
2 wherefor the middleware unit includes a monitor timer; and
3 wherefor, when a value held by the monitor timer reaches a
4 predetermined value, session data are deleted from the
5 cache table by the middleware unit.

1 30. A bridge method, according to claim 22,
2 further comprising a step of:
3 receiving the specific frame that is to be relayed
4 by the second network to the first network and that is
5 defined by a communication protocol equal to or higher than
6 the fifth OSI layer and that includes an RTP frame.

1 31. A bridge method, according to claim 22,
2 further comprising a step of:
3 extracting the session data, which include an MAC
4 address pertinent to the second OSI layer for the specific
5 frame, a protocol number and an IP address pertinent to the
6 third OSI layer, and a port number pertinent to the fourth
7 OSI layer.